

WHAT IS CLAIMED IS:

1. An image scanner for scanning an image by using an image sensor with a plurality of imaging devices disposed in a single row, comprising:

an imager unit having a plurality of sensor chips disposed in a single connected row, each sensor chip having a plurality of imaging devices;

an A/D converter unit for converting an image signal output from the imager unit to digital pixel data;

a compensator unit for correcting for variations in characteristics of the imaging devices of the sensor chips; and

an interpolator unit for interpolating missing pixel data occurring at points where the sensor chips are mutually connected; wherein

the interpolator unit performs missing pixel interpolation after the compensator unit corrects for the variations in the characteristics of the imaging devices.

2. The image scanner of claim 1, wherein the compensator unit corrects for black level variations among the imaging devices, then corrects for sensitivity variations.

3. The image scanner of claim 1, wherein the interpolator unit comprises at least one mean preserving interpolation circuit for obtaining pixel data for a missing pixel by performing interpolation such that a mean value of a plurality of pixels including the missing pixel and a mean value of a plurality of pixels not including the missing pixel become equal.

4. The image scanner of claim 3, having a plurality of mean preserving interpolation circuits that perform

interpolation at a non-missing pixel near the missing pixel, the results of the interpolation by each mean preserving interpolation circuit being evaluated and the mean preserving interpolation circuit giving the best result being used to perform interpolation for the missing pixel.

5. The image scanner of claim 3, wherein the mean preserving interpolation circuit has a circuit for limiting an output range according to maximum and minimum values of pixels neighboring the missing pixel.

6. The image scanner of claim 1, wherein signals from different parts of the image sensor are output in parallel, and the A/D converter unit includes a plurality of sample-hold circuits for sampling and holding the signals output in parallel, a switch for sequentially selecting outputs of the plurality of the sample-hold circuits, and an analog-to-digital (A/D) converter for A/D conversion of the output of the switch.

7. The image scanner of claim 1, wherein the imaging devices comprise imaging devices of a plurality of types sensitive to different colors, the plurality of types of imaging devices sensitive to different colors being disposed in a prescribed sequence, the interpolator unit performing interpolation processing on the basis of pixel data of pixels of the same color as the missing pixel.

8. A signal processing method for processing an image signal obtained by a imager unit having a plurality of sensor chips disposed in a single row, wherein
interpolation processing for missing pixels occurring at points where the sensor chips are mutually connected is performed after correction for variation of characteristics

of the imaging devices of the sensor chips included in the image signal.

9. The signal processing method of claim 8, wherein the correction for the variation of the characteristics includes a correction for black level of the imaging devices and a correction for sensitivity variation.

10. The signal processing method of claim 8, wherein the interpolation is performed so that a mean value of a plurality of pixels including the missing pixel and a mean value of a plurality of pixels not including the missing pixel become equal.

11. The signal processing method of claim 10, wherein interpolation is performed for a non-missing pixel near the missing pixel using different numbers of pixels, the interpolation results are evaluated, and the interpolation for the missing pixel is performed using a number of pixels equal to the number of pixels determined to produce the best result.

12. The signal processing method of claim 10, wherein the interpolation further includes limiting an output range according to maximum and minimum values of pixels neighboring the missing pixel.

13. The signal processing method of claim 8, wherein:
the imaging devices comprise imaging devices of a plurality of types sensitive to different colors, the plurality of types of imaging devices sensitive to different colors being disposed in a prescribed sequence; and
the interpolation is performed on the basis of pixel data of pixels of the same color as the missing pixel.